



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

2 45 0363 9320



UNIVERSITY OF MICHIGAN LIBRARY

JORDAN, D. S.  
THE TRAINING OF A PHYSICIAN.

R  
707  
J82  
1903  
LANE  
HIST

**LANE**

**MEDICAL**



**LIBRARY**

**LEVI COOPER LANE FUND**

Lane Medical

**THE TRAINING OF A PHYSICIAN.**

**BY PRESIDENT DAVID STARR JORDAN,  
LELAND STANFORD JR. UNIVERSITY.**

[Reprinted from THE POPULAR SCIENCE MONTHLY, August, 1903.]

LANE LIBRARY

YVAE LIBRARY

## THE TRAINING OF A PHYSICIAN.\*

BY PRESIDENT DAVID STARR JORDAN,  
LELAND STANFORD JR. UNIVERSITY.

IN mediæval times the physician was a compound of sorcerer and priest; distrusted by sorcerers lest he disclose the secrets of their trade; distrusted by priests lest he undo their work with the heathenism of sorcery. His operations were mystic, out of relation to cause and effect, for it was widely believed that the forces of the body are independent of bodily structures, and that sickness was a blow from the outside, a penalty for sin or lust or unbelief, not the expression of bodily derangement.

So the physician dealt with words as much as with medicines. Many Latin words held a magic power. By their use he could call up spirits, mostly evil, could put man to sleep or make a broomstick alive. Lest he carry these things too far, there were statutes forbidding the physician to act save in the presence of a priest. Besides words, he dealt in simples; each drug having potency over its particular disease. These drugs he would know by their signatures, the mark of the Almighty on them indicating their use. Thus a scrofulous-looking root would cure scrofula, snake-head or snake-root would cure snake bite; blood-root with red juice was good for the blood; celandine with yellow juice was marked for jaundice; liver-wort with liver-shaped leaves would heal the liver; eye-bright with an eye-spot in the flower would heal the eyes; bear's grease from hairy bears would cure baldness; a hair of the mad dog would relieve its venom. A red rag would cure inflammations. A drug which would give a headache would cure it. A long series of fancies and superstitions, which find their natural continuance in the electric belts and patent medicines of to-day.

Surgery was despised by medicine, and the little which was practised fell to the lot of barbers; with dirty knives and reckless hands surgery ended in gangrene and blood poisoning.

The success of the physician lay largely in the mystery of his operations, his Latin words and the red and blue flames which danced about the broths he concocted.

Meanwhile sanitation and diet were regarded as contrary to religion. Even the taking of medicine was sometimes forbidden as being a scheme to thwart God's purposes. Besides all this, the words

---

\* Abstract of address, Cooper Medical College Commencement.



of the great physician, Galen, became the court of final appeal, and his ignorance marked the limit of all medical knowledge.

Yet there were great physicians in those days, martyrs and saints who should rank with the noblest, men who tried to know the truth and to act in accord with it. Roger Bacon was on the verge of discovering the secret of contagious disease and its prevention by inoculation and sanitation. Fourteen years in prison prevented all this.

Vesalius in these days was the founder of anatomy. Dissection of human bodies was prohibited as sacrilegious, the work of sorcerers and dangerous, as the supposed resurrection bone, the nucleus of the rising body, might be injured or destroyed by careless handling. Vesalius haunted gibbets and charnel houses, for the waste of human bodies. He hoped especially to find through dissection the secret of the Black Death. The personal physician of Charles V., he had powerful protection in his early work, but he fell at last under the mean bigotry of Philip II. "He was not lost," says President White. "In this century a great painter has again given him to us. By the magic of Hamann's pencil Vesalius again stands on earth and we look once more into his cell. Its windows and doors, bolted and barred within, betoken the storm of bigotry which rages without; the crucifix, toward which he turns his eyes, symbolizes the spirit in which he labours; the corpse of the plague-stricken beneath his hand ceases to be repulsive; his very soul seems to send forth rays from the canvas, which strengthen us for the good fight in this age."

Those who destroyed Vesalius did so in the name of religion. It was believed that 'diseases are sent as punishment; who interferes with them breaks God's commandment and is God's enemy.'

This belief checked the growth of medicine even so late as fifty years ago when Simpson first used anæsthetics in obstetrics. This was held to violate the command: 'In sorrow shalt thou bring forth children.' To doubt the prevalent theory of disease was to doubt all religion and to be a foe to Christianity. No wonder there were physicians who doubted; no wonder that it was declared on high authority: 'When three physicians meet, there are two atheists,' if by atheist was meant all who believe that diseases are produced by natural causes.

So long as medicine rested on a basis of mystery, symbolism and philosophy, its limits set by the words of Galen, so long its progress was marked by martyrs, not by its successful practitioners. Even a hundred years ago success in medicine was largely quackery. Imaginary diseases were treated and in fantastic ways. In Napoleon's time, the itch was a prevalent disease in the higher classes, a disease which they did not know how to cure. At this time, most internal ills were diagnosed as 'Gale repêcutée,' 'Itch struck-in,' and the arch

medical performer of his time, Hahnemann, is reported to have said that two thirds of all diseases have this origin, 'they are the itch struck-in.' But a little knowledge of entomology with a hand lens has abolished the disease. Itch no longer 'strikes in' and nothing is more easily cured. Meanwhile the internal disorders called itch are being treated each in its own way.

The progress in medicine has been in proportion to its dependence on science and the scientific method. Science is human experience tested and set in order. Progress through science means simply learning through experience and taking pains to sift and test experience.

I need not speak of the details of this progress. Surgery is applied anatomy; antiseptics is applied bacteriology; pharmacology is applied chemistry; with instruments of precision, wonderful progress is made in the interpretation of experience. There is nothing in the history of science more suggestive than the simultaneous lights thrown on bacteria and microbes from many quarters at once. Lister with his clean knives and antiseptic surgery, Bastian trying to prove the spontaneous generation of infusoria in vegetable broths; Tyndall trying to clear his tubes from floating particles in the air which break up the rays of light, Pasteur with his blighted silk-worms—all these men were at work at the same problem—each with his varied instruments of precision, and the final result of all, the theory of fermentation, putrefaction, antiseptics and contagious diseases. Our knowledge of the minute organisms all about us, as real, as helpful or as harmful as the larger creatures of the earth, but the whole beyond the reach of the unaided senses.

With this knowledge, we have a new birth of the art of medicine. When we know our enemies, we can fight them intelligently. The progress of medicine, its achievements and discoveries being granted, how shall we teach it?

There should be advance in methods of teaching as well as in methods of gaining and testing facts. In the old days we had the method of apprenticeship. The little doctor saw what the big one did and followed his method. He learned to say the magic word, to make the magic passes, to brew the magic drug, to say more than he knows and to know more than he says.

In the ancient universities, the lecture was an exercise in dictation, the student taking word for word the wise phrases of the master. The ancient wizardry still prevails in some of our forms of medico-religious healing; the ancient belief in simples and signatory remedies, in our patent medicine trade. With ignorant people, the mysteries of



ignorance are valued above wisdom. To value wisdom is already to be wise.

The physician of to-day is not a priest nor a sorcerer. His place is rather that of an engineer. One who understands the make-up of the human mind machine, tries to keep it in order and faithfully repairs it when its parts are out of place. He knows that each effect has a cause, none the more mysterious because it must be sought with instruments of precision. He regards pain as a warning, not as a punishment. It is a sign that a screw is loose somewhere, and were it not for this warning we should not be sure to make it good.

In the continental universities of Europe, the teaching of medicine has been from the first a university function. The faculty in medicine has been one of the primary divisions of the university. The teaching of medicine has kept pace with the instruction in law, philosophy and science, under the same general influences, and with the same methods of control. In England, medical instruction has been more or less divorced from the university. It has been rather a function of medical associations and hospitals.

The American college had its origin in English models. Like the colleges of Oxford and Cambridge, it was more or less under ecclesiastical control, its first purpose being to develop clergymen and gentlemen, professional training being outside its scope and purpose. Thus the medical school in America arose through associations of physicians, wholly apart from the college system.

But the same argument which justifies common schools, high schools and state universities at public expense, applies to medical schools also. It is cheaper for a state, and infinitely better for it, to educate its own physicians than to tolerate uneducated ones. Better to educate its doctors and hire them afterwards than to be the prey of the quack, the impostor, the nostrum vendor and the almanac. This was the view of the founders of the University of Michigan, the first state college to devote itself frankly to the service of the state, regardless of tradition, regardless of what other states and institutions may be doing.

Other states followed the example of Michigan, establishing schools of law and medicine and of other professions. Still others, as Indiana, adopted a contrary view, and for a time refused to appropriate money to 'help young men into these easy professions.'

Meanwhile, in default of endowment and public support, private interest founded medical schools where they were needed. Later, for purposes of advertising or of money-making, other schools of lower standards were established where they were not needed. Hence we have finally medical schools of every grade of honor and of dishonor,

some ranking with the best in the world, others periodically raided by the police.

Our democratic custom is to let every school shift for itself. In the eyes of the law, every doctor is a doctor, if he has earned or bought a diploma somewhere—herb-doctor, corn-doctor, faith-healer, electric-healer, all kinds of healers, pass as doctors, and the people must choose for themselves.

Doubtless science wins in the long run. The honest school and the honest man are the final winners, but there is a prodigious amount of waste and suffering before the public knows the difference between surgeons and bloodsuckers.

More and more the honest medical schools are brought into touch with the university. Around the university the tested educational machinery tends to center. Sound instruction in medicine demands a broad base of science—physiology, anatomy, chemistry, histology, bacteriology and above all the methods of scientific research. All these are fundamental to any real knowledge of the art of medicine. All these are essentials in the work of the modern university. The medical school is giving these up to the institutions which can teach them for their own sake, and therefore teach them better. This change shortens the medical course, by making it longer, by placing it on a broader and higher foundation. The medical school, then, teaches the application of science, the science itself being studied elsewhere. There is a tendency toward an easy transition from the one to the other, so that the student can not tell when he began to study medicine.

In the old days the transition was abrupt, and the medical student learned applications of science before he had the faintest idea of science itself. He was thrown at once into a topsy-turvy world, where decencies did not count, where grewsome honors were everyday affairs, and where all ordinary restraints were cast aside. Hence he kept his tobacco in the skull of a murderer, wore a resurrection bone for a scarf-pin, and was the most reckless, lawless, irreverent of all students, careless of temperance, sanitation and chastity. Of all students, thirty years ago, the medical student had deservedly the reputation of being the worst.

Leaving out ill-equipped or temporary schools, the American medical school of the future will have one or the other of two great purposes. The one is typified perhaps by the Medical School of Michigan. It will take the profession as it is and raise it as a whole. So many men will be doctors, so many will be lawyers in Michigan. Let us take them as we find them and make them just as good lawyers and doctors as we can. Let us not drive them away by requirements they can not or will not meet, but adjust the work and conditions to the



best they can meet, the best standards winning in the long run and carrying public opinion with them.

The other ideal is perhaps typified by Johns Hopkins University. Let the university medical school deal with the exceptional man of exceptional ability and exceptional training. Give him special advantages; send out a limited number of the best physicians possible, and raise the standard of the profession by filling its ranks with the best the university can send.

The one ideal or the other will be, consciously or not, before each professional school which strives to be really helpful. It is not for me to say which is best. The one purpose naturally presents itself to state institutions, or to institutions dependent on appropriations or patronage. The other is more readily achieved by institutions of independent endowment. It is a matter of economy that all schools should not be alike in this respect.

What should be the regular requirement for entrance to the medical school? The university influences tend to push requirements up. The influence of the counting room and the desire to show numbers tend to push them down. Shall men go into medicine from the common school, from the high school; from the middle of the college course; from its end? Or shall we, with Johns Hopkins, demand not only a college course, but one which contains all the sciences fundamental to the study of medicine.

For the second type of schools, the schools which aim at the highest professional success, the latter is the natural requirement, the only one worth considering. For the schools which would elevate the profession as it is, the facts must be met half way. We know that a common school preparation is farcical, yet great physicians have been made with this as the basis of education. Such are men who can learn from their own experience and interpret the experience of others. No matter how wide the door of the colleges, there are some men so strong as to be capable of educating themselves.

The high school course gives a certain breadth of culture. The high school of to-day is as good as the college of forty years ago, so far as studies go. It misses the fact of going away from home and of close relation with men of higher wisdom and riper experience than our high schools demand in their teachers.

It takes a broader mental horizon to be a physician than merely to practise medicine. For those who want the least education possible, they can get along with very little; they can omit the college. But for large-minded, widely competent men, men fit for great duties, not a moment of the college course can be spared. Whether to take a college education or not, depends on the man—what there is in him—

and on the course of study. There is no magic in the name of college, and there is no gain in wrong subjects, work shirked, or in right subjects taken under wrong teachers. Studies, like other food, must be assimilated before they can help the system.

The great indictment of the college is its waste of the student's time; prescribed studies taken unwillingly; irrelevant studies taken to fill up, helpful studies taken under poor teachers, any kind of studies taken idly—all these have tended to discredit the college course. Four years is all too short for a liberal education, if every moment be utilized. Two years is all too long if they are spent in idleness and dissipation, or if tainted by the spirit of indifference.

The spirit of the college is more important than the time it takes. The college atmosphere should be a clean and wholesome one, full of impulses to action. It is good to breathe this air, and in doing so, it matters little whether one's studies be wholly professional, half professional, or directed towards ends of culture alone.

The practical evolution of this matter will be this: The medical school for the exceptional student will require a college course of science with physiology and chemistry as the leading subjects, other sciences, with German and French, being necessary factors. The state medical colleges and those of similar purposes will content themselves with a minimum of two years of college work, along semi-professional lines, the preparatory medical course.

In city colleges where the students live at home, traveling back and forth on street cars, a college atmosphere can not be developed. In these institutions, as a rule, the college work is perfunctory, its recitations being often regarded as a disagreeable interruption of social and athletic affairs. As a rule, higher education begins when a man leaves home to become part of a guild of scholars. The city college is merely a continued high school, and with both students and teachers there is a willingness to cut it as short as possible, so that the young men can 'get down to business.' In institutions of this type, the professional school forms a sharp contrast to the college in its stronger requirements and more serious purpose. In other types of college, it is the general student who does the best work. In many of them the professional departments are far inferior in tone and spirit to the general academic course.

It becomes, then, a question of the college itself, how long a student should stay in it. If the academic requirements are severe, just and honest, if the idler, the butterfly, the blockhead and the parasite are promptly dropped from the rolls, if the spirit of plain living and high thinking rules in the college, the student should stay there as long as he can, and if possible take part of his professional work under



its guidance. The nearer the teacher, the better the work. The value of teachers grows less as the square of their distance increases. If the college course is a secondary matter, with inferior teachers talking down to their students lessons prescribed because the faculty cares too little for the individual man to adapt its courses to his needs, an atmosphere of trifling, or no atmosphere at all, the sooner the student gets into something real, the better. A good university may develop in a great city, a good college can not, because teachers and students are all too far apart.

In this matter the college degree is only an incident. It is the badge of admission to the roll of alumni, a certificate of good fellowship, which always means a little and may imply a great deal. But the degree is only one of the toys of our educational babyhood, as hoods and gowns represent educational bib and tucker. Don't go out of your way to take a degree. Don't miss it because you are in too great a hurry. For the highest professional success, you can afford to take your time. It takes more provision for a cruise to the Cape of Good Hope than for a trip to the Isle of Dogs.



LANE MEDICAL LIBRARY

To avoid fine, this book should be returned on  
or before the date last stamped below.

NOV 28 1984		
-------------	--	--

R

707

J82

1903

LANE

HIST



